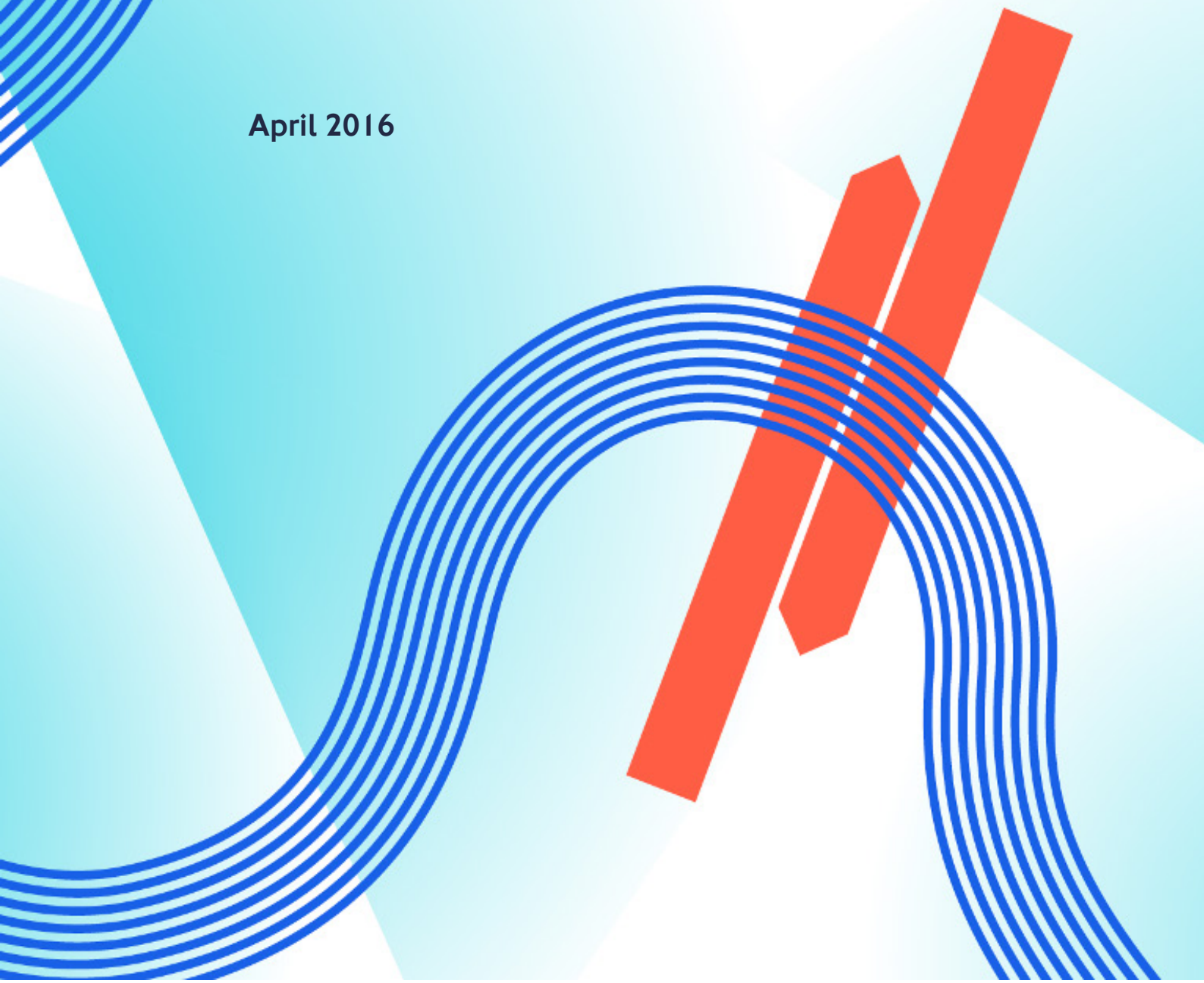
SILVERTOWN TUNNEL

Environmental Statement Appendix 16C (6.3.16.3)

Flood Warning and Evacuation Plan

April 2016



MAYOR OF LONDON

TRANSPORT FOR LONDON

EVERY JOURNEY MATTERS

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List of Abbreviations

ABD	Area Benefitting from Defences
AEP	Annual Exceedance Probability
ES	Environmental Statement
FRA	Flood Risk Assessment
ha	Hectares
m	Metres
NGR	National Grid Reference
NN NPS	National Road and Rail Networks: National Policy Statement
NPPF	National Planning Policy Framework
TfL	Transport for London

Glossary of Terms

Annual chance	Floods are described according to an 'annual chance'. Meaning the chance of a particular flood occurring in any one year. This is directly linked to the probability of a flood. For example, a flood with an annual chance of 1 in 100 (a 1 in 100 chance of occurring in any one year), has an annual probability of 1%.
Breach scenario	A Breach scenario is when a flood defences overtops or fails
Core Strategy	The Core Strategy sets out the vision, key objectives and strategic planning policies for the area.
Flood Alert	A Flood Alert is issued when a flood is imminent in a certain area
Flood gates	Flood gates used to control water flow in flood barriers, reservoir, river, stream, or levee systems.
Floodplain compensation	An artificially excavated, hydraulically equivalent volume of floodplain storage sufficient to offset a reduction in floodplain storage resulting from filling or construction within the local regulatory floodplain.
The Scheme	The construction of a new bored tunnel with cut and cover sections at either end under the River Thames (the Silvertown Tunnel) between the Greenwich peninsula and Silvertown, as well as necessary alterations to the connecting road network and the introduction of user charging at both Silvertown and Blackwall tunnels.

SUMMARY

S.1.1 Transport for London (TfL) is proposing a new road tunnel linking areas north and south of the River Thames between the Greenwich Peninsula and Silvertown (referred to hereinafter as the Scheme). The Environment Agency Flood Map shows that the southern worksite and portal of the Scheme is located wholly within Flood Zone 3, attributed to the 1 in 200 year floodplain of the River Thames. The majority of the northern portal of the Scheme is also located in Flood Zone 3, with a small area located in Flood Zone 2 (in the 1 in 1000 year floodplain). The northern and southern portals of the Scheme are shown to benefit from existing flood defences.

S.1.2 This Flood Warning and Evacuation Plan has been informed by the findings of the Silvertown Tunnel Flood Risk Assessment (FRA) (Appendix 16.A (Document Reference: 6.3.16.1)). It should be stored in an accessible location and be revisited on a regular basis.

S.1.3 During the construction phase of the Scheme the Contractor would be responsible for refining this Flood Warning and Evacuation Plan to ensure suitable preparation and protection of site personnel in the event of a flood.

S.1.4 During the lifetime of the Scheme TfL would be responsible for reviewing and updating this Plan to ensure suitable preparation and protection of users of the transport route in the event of a flood during the operational lifetime of the Scheme.

S.1.5 A number of pre-construction actions have been outlined within the Plan, including registering both the northern and southern portals of the Scheme with the Environment Agency Floodline Warning Direct service, identifying appropriate access and egress routes and designating evacuation points.

S.1.6 The Flood Warning and Evacuation Plan also provides contact details for Emergency Services and the relevant instances for contacting each service. Such information would be utilised in the training of personnel to ensure a flood-safe working environment during construction and over the lifetime of the Scheme.

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1. INTRODUCTION

1.1 Background

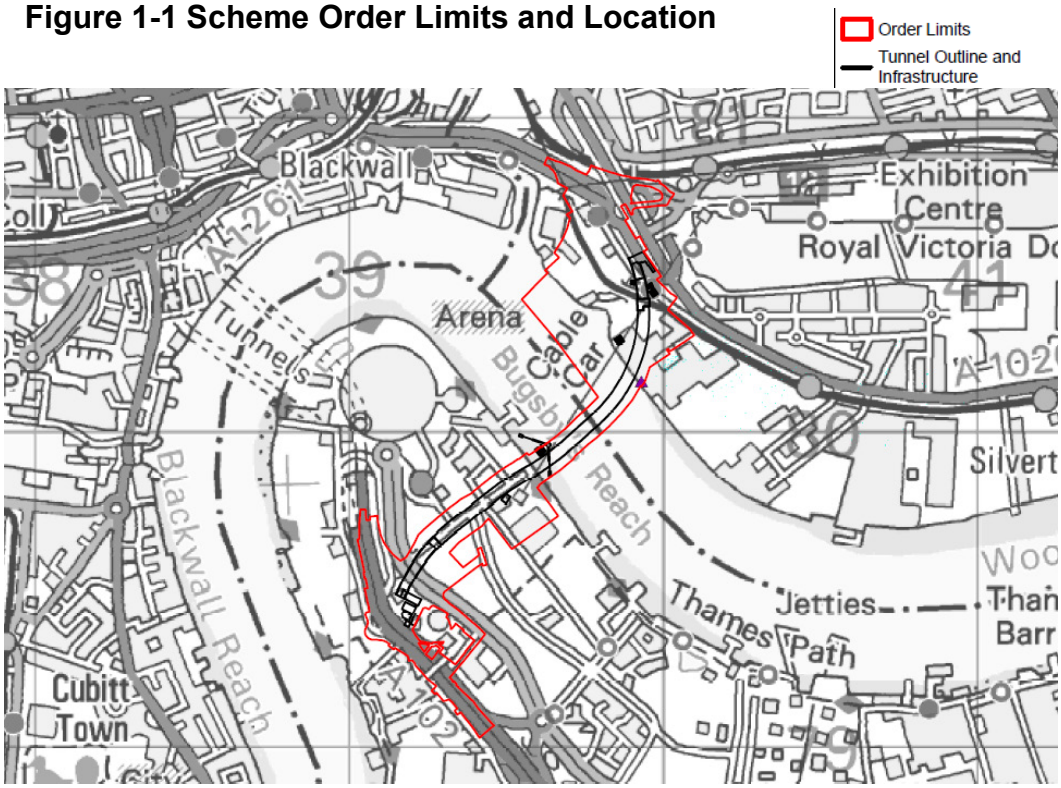
1.1.1 TfL has been investigating options to reduce congestion at the Blackwall Tunnel, and improve the reliability and resilience of the wider road network in London. TfL is proposing a new road tunnel linking areas north and south of the River Thames between the Greenwich Peninsula and Silvertown, which is hereinafter referred to as the Scheme[1].

1.1.2 This draft Flood Warning and Evacuation Plan, hereinafter referred to as the Plan, contains information on flood emergency response actions and covers both the main construction works phase and the operational lifetime of the Scheme. The Plan has been informed by a FRA (Appendix 16.A (Document Reference: 6.3.16.1)), which demonstrates that the Scheme meets the requirements of the National Planning Policy Framework (NPPF) and the National Road and Rail Networks National Policy Statement (NN NPS). Paragraphs 5.92 and 5.93 of the NN NPS require that applications for projects in Flood Zones 2 and 3, such as the Scheme, should be accompanied by an FRA that identifies and assesses the risks of all form of flooding to and from the project and demonstrate how these risks will be managed. This Plan represents one of the flood risk management tools that would be adopted for this Scheme.

1.1.3 The Scheme and associated watercourses are illustrated in Figure 1-1. The Scheme boundary (Order Limits) encloses of an area of approximately 42 hectares (ha) of land which includes the operational tunnel and temporary construction worksite areas to the north and south of the tunnel. The Scheme involves the construction of a twin bore road tunnel providing a new connection between the A102 Blackwall Tunnel Approach on Greenwich Peninsula (Royal Borough of Greenwich) and the Tidal Basin roundabout junction on the A1020 Lower Lea Crossing/Silvertown Way (London Borough of Newham). The Silvertown Tunnel would be approximately 1.4km long and would be able to accommodate large vehicles including double-deck buses. The Boord Street footbridge over the A102 would be replaced with a pedestrian and cycle bridge.

[1] Throughout this report references to Scheme are referring to the current preferred engineering and environmental option that will be subject to further iteration through the design process.

Figure 1-1 Scheme Order Limits and Location



1.1.4 Based on the Environment Agency Flood map the southern portal is located wholly within Flood Zone 3, in the 1 in 200 year floodplain of the River Thames. The majority of the northern portal is also located in Flood Zone 3 but a small area is located in Flood Zone 2, in the 1 in 1000 year floodplain. Both the northern and southern portals are classed as being in an 'Area Benefitting from Defences' (ABD), which reduce the actual flood risk to the Scheme.

1.1.5 Existing defences provide a standard of protection in excess of 1 in 1000. However the predicted effects of climate change are such that over the development lifetime, if policies set out in the Thames Estuary 2100 Plan are not implemented, this standard of protection will diminish and there is potential for overtopping and increased risk of defence failure (breach).

1.1.6 The main source of flood risk to the Scheme is therefore a residual risk associated with a breach (failure) of existing river defences in combination with extreme tide levels. Bespoke breach modelling has been undertaken of the Thames defences with the aim of quantifying flood conditions within the application boundary in a breach scenario. The modelling study has considered a breach in the northern bank of the Thames at a location just south of Bell Lane (National Grid Reference (NGR) 539930 180170) as agreed with the Environment Agency. The baseline (without Scheme) and

post development scenarios were represented in the ground terrain element of the model and the 0.5% AEP (1 in 200) tidal flood event was simulated for three time horizons: 2005, 2065 and 2115, incorporating appropriate allowance for climate change. The results are summarised in Table 1-1 and full details are provided in the Flood Risk Assessment (Appendix 16.A (Document Reference: 6.3.16.1)).

Table 1-1 Northern Portal – summary of breach modelling results

Modelled Scenario	Summary of Baseline Flood Risk to the Scheme	Flood Risk to the Scheme and Impacts beyond the Application Boundary
2005	No flooding within the application boundary.	No flood risk to the Scheme and no impact on baseline floodwater depths or extents, either within or beyond the Order Limits.
2065	Flooding would occur within south eastern parts of the application boundary with floodwater depths ranging from 0.01m to 0.55m. However, these areas are for use during the construction phase of the Scheme only and no areas within the operational boundary are at residual flood risk.	No flood risk to the operational Scheme. Minor increase (0.01m) in baseline floodwater depths in some construction work sites. On third party land max increases of 0.02m predicted, with max baseline flood level reductions of 0.02m in other areas.
2115	Flooding would occur within south eastern parts of the application boundary with floodwater depths ranging to a max of	No flood risk to the operational Scheme. Minor increase (0.01 -0.05m) in baseline floodwater depths on some land to be acquired during the

Modelled Scenario	Summary of Baseline Flood Risk to the Scheme	Flood Risk to the Scheme and Impacts beyond the Application Boundary
	0.8m. However, these areas are for use during the construction phase of the Scheme only and no areas within the operational boundary are at residual flood risk.	construction phase. On third party land max increases of 0.05m area predicted, with baseline flood level reductions of up to 0.07m in other areas.

1.1.7 It is concluded that land within the operational boundary on the northern side of the River Thames is not at residual risk of flooding should defences fail (breach) in the location that has been modelled. This location was selected on the basis that it is most vulnerable to breach. It is also concluded that construction of the Scheme will have no significant impacts on residual flood risk to third party land.

1.1.8 Two breach locations were modelled on the southern bank of the River Thames (breach location 1 and breach location 2). These locations, just north of Anchor and Hope Lane (NGR 539930 180170) and off Morden Wharf Road (NGR 539100, 178970) were also agreed with the Environment Agency and the results of the baseline and post development model runs for the three time horizons considered are summarised in Table 1-2 and Table 1-3.

Table 1-2 Southern Portal Breach location 1 – summary of breach modelling results

Modelled Scenario	Summary of Baseline Flood Risk	Flood Risk to the Scheme and Impacts beyond the Application Boundary
2005	No flooding within the application boundary.	No flood risk to the Scheme and no impact on baseline floodwater depths or extents, either within or beyond the application

Modelled Scenario	Summary of Baseline Flood Risk	Flood Risk to the Scheme and Impacts beyond the Application Boundary
		boundary.
2065	The vast majority of the application site is predicted to be flood free during this event, with model results indicating shallow depths of floodwater (up to 0.3m) on one very small area.	No flood risk to the operational Scheme and there is very little change to baseline flood depths/extents, with baseline levels generally varying between +0.1m and -0.1m within and beyond the application boundary.
2115	The majority of the application site would be flood free during this event. Some flooding along boundary with the A102, to depths of 0.01m to 0.7m.	Flooding around the southern tunnel entrance is predicted. On third party land, flooding no longer occurs along the northern section of the A102 and baseline flood levels are reduced along the remainder of the A102.

Table 1-3 Southern Portal Breach location 2 – summary of breach modelling results

Modelled Scenario	Summary of Baseline Flood Risk	Flood Risk to the Scheme and Impacts beyond the Application Boundary
2005	No flooding within the application boundary.	No flood risk to the Scheme and no impact on baseline floodwater depths or extents, either within or beyond the red line boundary
2065	Flooding along the A102 and Pavilion	Flooding around the southern tunnel entrance is

Modelled Scenario	Summary of Baseline Flood Risk	Flood Risk to the Scheme and Impacts beyond the Application Boundary
	Lane is predicted. Floodwater depths range to approximately 0.6m.	predicted, with depths exceeding 1m. Elsewhere there are reductions in baseline floodwater levels and extents, particularly along the A102.
2115	Flooding along the A102, Pavilion Lane and Boord Street is predicted in this scenario. Floodwater depths range to approximately 0.8m.	Flooding around the southern tunnel entrance is predicted, with depths exceeding 2m. Elsewhere there are reductions in baseline floodwater levels and extents, particularly along the A102.

1.1.9 Future maintenance of the southern defences is therefore more critical to reducing residual flood risk to the operational Scheme. Therefore, in order to manage the residual flood risk, this draft Plan has been developed to ensure the preparedness, in the event of a flood emergency, of construction personnel and the tunnel operator during the lifetime of the Scheme.

1.1.10 This draft Plan should be further refined by the Contractor in consultation with the London Borough of Newham and Royal Borough of Greenwich (the two Lead Local Flood Risk Authorities within the study area), TfL (the Applicant) and the Environment Agency as well as the Police, Fire and Rescue Services.

1.2 Terminology

1.2.1 Flood risk is a product of both the likelihood and consequence of flooding. Throughout this report, flood events are defined according to their likelihood of occurrence. Floods are described according to an ‘annual chance’, meaning the chance of a particular flood occurring in any one year. This is directly linked to the probability of a flood. For example, a flood with an annual chance of 1 in 100 (a 1 in 100 chance of occurring in any one year on average), has an annual exceedance probability (AEP) of 1%.

2. FLOOD WARNING AND EVACUATION PLAN OVERVIEW

2.1 Aim and Objectives

2.1.1 The key aim of the Plan is to provide the Contractor during the construction phase and operator during the lifetime of the Scheme clear indicators confirming when the Scheme should be evacuated in the unlikely event of a flood emergency. The Plan also provides key information for planning and responding to an evacuation.

2.2 Evacuation Triggers

2.2.1 Environment Agency Flood Warnings have been used to set evacuation triggers. Three trigger stages have been identified, namely to implement a review of the Emergency Plan procedures, place staff on a green alert (state of readiness) or issue a red alert (site evacuation). This is discussed further in section 5.

2.2.2 It is recommended that the Contractor and TfL/future operator sign up to the Environment Agency's flood warning service so that when the Environment Agency issues a flood alert or warning, the service will send an automated warning message to the Contractor and TfL.

2.3 Plan Structure

2.3.1 This Flood Warning and Evacuation Plan is broken down into the following sections:

- Section 3 - outlines the key 'pre-occupation' actions that the Scheme's Contractor should complete to implement the Plan.
- Section 4 - provides details of key contacts and information covering both construction and operational phases of the Scheme.
- Section 5- outlines the triggers for action and recommended evacutation procedures.
- Section 6 - summarises training requirements to support the implementation of the Plan.
- Section 7 - confirms the requirements for updating and reviewing the draft Plan.

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3. PRE-OCCUPATION ACTIONS

3.1.1 Prior to the commencement of construction of the Scheme it shall be the responsibility of the Contractor to ensure that all actions outlined in Table 3-1 are completed.

3.1.2 When the Scheme is complete and operational, then it will be the tunnel operator's responsibility to ensure that all actions outlined in Table 3-1 have been completed and that any necessary updates are put in place. For example the need to get vehicles/public out of the tunnel and shut down ventilation plant and power supplies.

Table 3-1 Pre-Occupation Actions

No.	Action	Further Information	Completion Date and Signature
1	Undertake a review of the Flood Warning and Evacuation Plan and make updates to take into account new or additional information.		
2	Register the northern and southern portal works sites with the Environment Agency Floodline Warnings Direct Scheme.	Registration with Floodline Warnings Direct can be made using the following link https://fwd.environment-agency.gov.uk/app/olr/register or by calling Floodline on 0345 988 1188	
4	Ensure all construction personnel are aware of the Flood Warning and Evacuation Plan and are trained sufficiently to implement the procedures set out in the Plan.		
7	Contractor to develop an emergency access and egress plan for the bored tunnelling works sites.	During site inductions, all staff will need to be made aware of the emergency access and egress arrangements.	
8	Contractor to identify an appropriate designated evacuation point from both the Northern and Southern portal works areas.	Designated muster sites should be located on public land within Flood Zone 1.	

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4. KEY CONTACTS AND INFORMATION

4.1.1 The tables and information provided in this section have been completed to their fullest possible extent. However, where incomplete lists or information omissions exist, these shall be addressed by the Contractor.

4.1.2 Table 4-1 lists contact numbers for personnel and relevant statutory undertakers that have key roles during a flooding emergency. This table should be completed by the Contractor. Once construction of the Scheme is complete this table should be periodically reviewed, and if necessary updated, by TfL and the tunnel operator during the lifetime of the Scheme.

Table 4-1 Key Personnel and their Contact Numbers

Title	Name	Role	Contact Number
TfL Project Team Manager		Ensure that the Flood Warning and Evacuation Plan has been put in place. Ensure sufficient resources (people, time and money) are provided to implement the Plan.	
Construction Contractor Manager		The construction contractor managers role is to ensure all Pre-Occupation Actions (Table 3-1)) have been completed as well as to ensure that the Emergency Plan is reviewed and updated annually.	
Contractor Construction Manager		Once flood warning alerts have been received it is the Construction Manager's responsibility to disseminate flood alerts to all members of staff. When severe flood warnings have been issued it is the Construction Manager's responsibility to contact the Emergency Services and Environment Agency to confirm that the construction works sites are being closed due to potential flooding. It is also the Construction Manager's responsibility to operate emergency electrical shut off switches that terminate electricity supply to the works sites. The Construction Manager should direct the evacuation of the works sites and help other members of staff to move to the designated	

Title	Name	Role	Contact Number
		evacuation points located in Flood Zone 1 (See Section 5.5). The Construction Manager should take a register to ensure all staff are accounted for. The Construction Manager should then provide an update to any on-site emergency services confirming that the site has been evacuated.	
Environment Agency Floodline		The Environment Agency will issue a flood warning to TfL Project Team Manager, and the Contractor Construction Manager.	0345 9881188

4.2 Emergency Services

4.2.1 Table 4-2 provides contact numbers for relevant Emergency Services.

4.2.2 In an emergency where there is a real and immediate threat to life or property always dial 999.

Table 4-2 Contact Numbers for Emergency Services

Body	Contact Number
London Fire and Rescue Service	020 8555 1200
City of London Police	101
Environment Agency	0345 988 1188

4.2.3 If medical attention is required within the workplace First Aiders should be in attendance and a record of the individual affected and the circumstances relating to the incident should be kept.

4.2.4 The closest hospital with an Accident and Emergency Department to the northern portal of the Scheme, is the Newham University Hospital. The Hospital can be contacted on 020 7476 4000, the address is: Newham University Hospital, Glen Road, Plaistow, London, E13 8SL.

4.2.5 The closest hospital with an Accident and Emergency Department to the Southern portal of the Scheme, is the Queen Elizabeth Hospital. The Hospital can be contacted on 020 8836 6000, the address is: Queen Elizabeth Hospital, Stadium Road, London, SE18 4QH.

4.3 Other Useful Numbers

4.3.1 Table 4-3 provides a list of other useful numbers for the northern portal of the Scheme. This table should be completed by the Construction Contractor Manager. Once construction of the Scheme is complete this table should be periodically reviewed, and if necessary updated, by TfL and the tunnel operator during the lifetime of the Scheme.

Table 4-3 Other Useful Contact Numbers – Northern Portal

Body	Name	Contact Number
Electricity Provider		
Gas Provider		
Water Company	Thames Water	0800 980 8800
Telephone Provider		
Local Authority	Newham London Borough Council	020 8430 2000
Local Radio Station	BBC London Radio NuSound Radio Newham	
Local TV Stations	BBC – London	

4.3.2 Table 4-4 provides a list of other useful numbers for the southern portal of the Scheme. This table should be completed by the Construction Contractor Manager. Once construction of the Scheme is complete this table should be periodically reviewed, and if necessary updated, by TfL during the lifetime of the Scheme.

Table 4-4 Other Useful Contact Numbers – Southern portal

Body	Name	Contact Number
Electricity Provider		
Gas Provider		
Water Company	Thames Water	0800 980 8800

Body	Name	Contact Number
Telephone Provider		
Local Authority	Greenwich London Borough Council	020 8854 8888
Local Radio Station	BBC London Radio WGCH	
Local TV Stations	BBC – London	

4.4 Insurance Details

4.4.1 Table 4-5 provides the details of the insurer for each of the construction works sites/compounds. This table should be completed by the Contractor for both the northern and southern portals during the construction of the Scheme. Once the Scheme has been built this table should be reviewed and if necessary updated by TfL for the lifetime of the Scheme.

Table 4-5 Insurance Details

Insurance Company	Policy Number	Contact Number

4.5 Location of Services

4.5.1 Table 4-6 lists the location of key service cut-off switches and valves. If it is safe to do so, it is recommended that these services are turned off by the Contractor Construction Manager when the application site is being evacuated. This table should be completed by the Contractor during the construction of the Scheme. Once the Scheme has been built this table should be reviewed and if necessary updated by TfL for the lifetime of the Scheme.

Table 4-6 Location of Service Cut-Off Switches and Valves

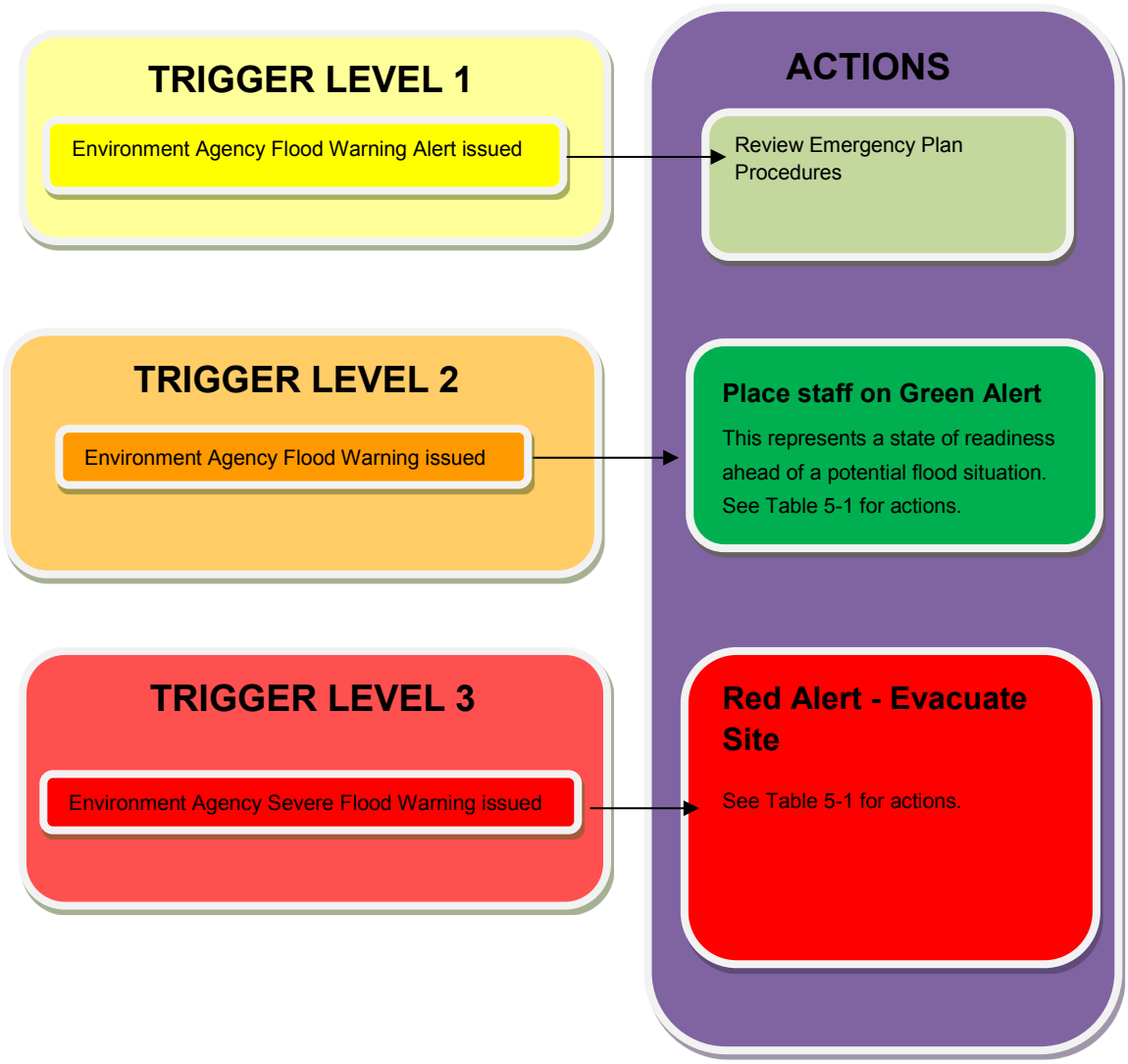
Service	Location of Cut-Off Switches and Valves
Electricity	
Gas	
Water	

5. FLOOD MANAGEMENT AND EVACUATION

5.1 Overview

5.1.1 An overview of the Flood Warning and Evacuation Plan procedures is shown in Figure 5-1. This figure shows the three trigger levels and the corresponding actions that will need to be implemented.

Figure 5-1 Flood Management and Evacuation Procedures



5.2 Environment Agency Flood Warning Service

5.2.1 Both the northern and southern portals would be linked to the Environment Agency's flood warning service so that when the Environment Agency issues a flood alert or warning, the service would send an automated warning message to the Contractor Construction Manager.

5.2.2 It should be noted that both portal areas are also situated in a larger geographical area where the Environment Agency provides a general early Flood Alert notification for possible flooding. Therefore, the Flood Alert may not specifically apply to the application site itself and its immediate neighbourhood.

5.2.3 Upon receipt of an Environment Agency Flood Warning the Contractor Construction Manager would notify staff of the Green Alert and complete a review to ensure that works sites, construction compounds and staff are in a state of readiness ahead of a potential flood situation.

5.2.4 The Environment Agency flood warnings are outlined in Table 5-1.

Table 5-1 Environment Agency Flood Warnings

Symbol	Risk	Status	When it is used	What to do
	High Risk	**Severe Flood Warning** Severe flooding. Danger to life.	When flooding poses a significant threat to life.	-Stay in a safe place with a means of escape. -Be ready should you need to evacuate. -Co-operate with the emergency services. -Call 999 if you are in immediate danger.
	Medium Risk	**Flood Warning** Flooding is expected. Immediate action required.	Half an hour to one day in advance of flooding.	-Turn off gas, electricity and water supplies if safe to do so. -Put flood protection equipment in place.

Symbol	Risk	Status	When it is used	What to do
	Low Risk	**Flood Alert** Flooding is possible. Be prepared.	Two hours to two days in advance of flooding.	-Be prepared to act on your flood plan. -Prepare a flood kit of essential items. -Monitor local water levels, weather reports and the flood forecast on the Environment Agency website.
	Very Low Risk	**Warnings no longer in force** No further flooding is currently expected in your area.	When river or sea conditions begin to return to normal.	-Be careful. Flood water may still be around for several days. -If you've been flooded, ring your insurance company as soon as possible.

5.3 Flood Management and Evacuation Procedures

5.3.1 The flood evacuation procedures are outlined in Table 5-2.

Table 5-2 Flood Evacuation procedures

	Warning Trigger	Procedures
1	Environment Agency Flood Alert	Review Flood Warning and Evacuation Plan Procedures
3	Environment Agency Flood Warning	Place staff on Green Alert, representing a state of readiness ahead of a potential flood situation. Check that all equipment can be accessed, is available and in good condition for use, with specific reference to - closed road signs, torches (check battery life/spares), high visibility jackets for all staff. During construction secure construction compounds and relocate vulnerable plant/machinery/stores to FZ1 if possible. Allow for handover should shift change occur before the warning is lowered. Check staff registers are complete and available to

	Warning Trigger	Procedures
		ensure all staff are accounted for post- evacuation.
4	Environment Agency Severe Flood Warning	Immediately start evacuation of construction work sites and compounds (Trigger Fire Alarm at compounds). Use allocated evacuation route to facilitate / direct the safe evacuation of all personnel. A register should be taken to ensure all staff are accounted for. Contact the Emergency Services and Environment Agency to confirm that the Construction Compounds are being closed due to possible risk of flooding. The Contractor Construction Manager shall operate the emergency electrical shut off switches terminating the electricity supply and all power supplies to construction works sites/compounds.

5.4 Indicative Flooding Sequence and Timings

5.4.1 Flooding is very complex and is controlled by a large number of highly variable physical factors such as the volume and intensity of rainfall, wave heights and surge. Therefore, accurate predictions for the sequence of potential flooding of the Scheme needs to be investigated by hydraulic modelling. Bespoke breach modelling has been undertaken to simulate flood conditions resulting from a failure of both the northern and southern defences and the model results have been used to estimate how much time it takes for floodwater to flow from the breach sites inland to reach the Scheme. This information is summarised in Table 5-3.

Table 5-3 Summary of Flood timings

Modelled Scenario	Time for floodwater to reach land within the application boundary
Northern portal, 2005 0.5% AEP flood event	No flooding is predicted
Northern portal, 2065, 0.5% AEP flood event	1 hour and 30 minutes*
Northern portal, 2115, 0.5% AEP	45 minutes*

Modelled Scenario	**Time for floodwater to reach land within the application boundary**
flood event	
Southern portal, Breach location 1 2005, 0.5% AEP flood event	No flooding is predicted
Southern portal, Breach location 1 2065, 0.5% AEP flood event	12 hours**
Southern portal, Breach location 1 2115, 0.5% AEP flood events	12 hours
Southern portal, Breach location 2 2005, 0.5% AEP flood event	No flooding is predicted
Southern portal, Breach location 2 2065, 0.5% AEP flood event	6 hours
Southern portal, Breach location 2 2115, 0.5% AEP flood event	6 hours

*no areas within the operational boundary of the Scheme are flooded and only very small areas of land to be acquired for construction of the Scheme will be flooded.
**no areas within the operational boundary of the Scheme are flooded.

5.5 Evacuation Route and Designated Evacuation Point

5.5.1 It is recommended that an evacuation route to a public place of safety in Flood Zone 1 is investigated and confirmed with the Contractor Construction Manager for the Scheme during the construction phase. Once the Scheme has been built the evacuation route should be reviewed by TfL and revised if deemed necessary. The following table should be completed by the Contractor during construction and by TfL during the lifetime of the development.

For the Northern Portal the designated evacuation point is located.....

……

For the Southern Portal the designated evacuation point is located.....

……

5.6 Water Level Falling

5.6.1 As detailed, the Environment Agency Flood Warnings identify a ‘potential’ rather than ‘actual’ threat. It should be noted that not all events would result in an automatic progression from one warning to another with the end result being flooding and evacuation of the application site. It is possible for smaller events to trigger initial warnings with water levels subsequently falling before flooding of the application site occurs.

5.6.2 Should water levels within the Thames Estuary exhibit a sustained fall at any point during the event, this would be identified by the River Level monitors and an automatic notification sent to the Contractor Construction Manager and TfL via phone and email.

5.6.3 With notification that the river level is falling the Contractor Construction Manager and TfL can downgrade the response to Green Alert at the Scheme.

6. TRAINING

6.1.1 During the construction phase a Flood Manager would be appointed by the Contractor and during the life time of the Scheme TfL would appoint a Flood Manager. The Flood Manager would ensure that all construction personnel and future travellers along the new transport route respectively are aware of the potential flood risk and of how to respond in the event of a flooding emergency. The training for construction personnel and post construction operatives would, as a minimum, cover:

- requirements of the Flood Warning and Evacuation Plan;
- confirmation of Key Roles, clearly identifying positions held, responsibilities, communication and chain of command;
- staff duties;
- evacuation routes;
- staff safety during a flood event;
- electrical systems emergency shut off procedures;
- operation of the communications / public address system, signage and traffic management systems;
- all construction staff shall be trained as part of the site induction process; and
- all staff shall be re-trained annually and biannual Flood Evacuation Drills should be conducted.

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7. FLOOD WARNING AND EVACUATION PLAN REVIEW

7.1.1 The Plan would be subject to update / review:

- whenever there are changes to any of the contact numbers, names or roles held within the Plan;
- every three months, to confirm all information is still relevant;
- once the Scheme has been built the Plan will be handed over to TfL and if necessary revised;
- all updates / reviews shall be documented and recorded;
- the Contractor Construction Manager shall ensure an up-to-date version of the Plan is available at all times during the construction phase; and
- during the lifetime of the development TfL shall ensure an up-to-date version of the Plan is available at all times.

7.1.2 When the Plan is updated Table 7-1 should be completed for document control and to understand why changes were needed.

Table 7-1 Plan procedures document control

Version	Date	Prepared by	Checked by	Approved by	Reasons for Revision

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